

$^{12}\text{C}(\text{d},\text{d}) \quad \textcolor{blue}{1974\text{Jo14,1975\text{As06,1980\text{Aj01}}}$

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	J. H. Kelley, J. E. Purcell and C. G. Sheu		NP A968, 71 (2017)	1-Jan-2017

- 1966Du08: $^{12}\text{C}(\text{d},\text{d})$ E=52 MeV, measured $\sigma(\theta)$. Deduced optical model parameters.
- 1966Ga09: $^{12}\text{C}(\text{d},\text{d})$ E=4 MeV, measured $\sigma(\theta)$.
- 1966Ge03, 1966Ka05: $^{12}\text{C}(\text{d},\text{d})$ E=2.0-3.7 MeV, measured $\sigma(E_p,\theta)$, $\sigma(\theta)$.
- 1967Au05: $^{12}\text{C}(\text{d},\text{d})$ E=63 MeV, measured $\sigma(\theta)$. Deduced optical model parameters.
- 1968Ba17: $^{12}\text{C}(\text{pol. d,d})$ $E_d=12$ MeV, measured vector polarization, $iT_{11}(\theta)$.
- 1968Co04: $^{12}\text{C}(\text{d},\text{d})$ E=4-6 MeV, measured $\sigma(E,\theta)$.
- 1968Co10: $^{12}\text{C}(\text{d},\text{d})$ E=3.5-7.1 MeV, measured tensor polarization (E,θ) .
- 1968Ga13: $^{12}\text{C}(\text{d},\text{d})$ E=28 MeV, measured $\sigma(\theta)$. DWBA analysis for comparison $(\text{d},^3\text{He})$, (d,t) cross sections, S.
- 1969Bo32: $^{12}\text{C}(\text{d},\text{d})$ E=0.9-2.0 MeV, measured $\sigma(E)$, $\sigma(E,E_d,\theta)$. Deduced resonance interference.
- 1969Co02: $^{12}\text{C}(\text{d},\text{d})$ E=5-10 MeV, measured $\sigma(E,\theta)$.
- 1969Ve09: $^{12}\text{C}(\text{d},\text{d})$ E=13.6 MeV, measured $\sigma(\theta)$. Deduced optical model parameters.
- 1970Al26: $^{12}\text{C}(\text{d},\text{d})$ E=1.4-2.3 MeV, measured $\sigma(E,\theta)$.
- 1970Bu08: $^{12}\text{C}(\text{vector-pol. d,d})$ $E_d=28$ MeV, measured $\sigma(\theta)$, $P(\theta)$. Deduced optical-model parameters.
- 1970Gu01: $^{12}\text{C}(\text{d},\text{d}), (\text{d},\text{d}')$ E=13.7 MeV, measured $\sigma(\theta)$. Deduced optical model parameters.
- 1971Bo39, 1971Bo44: $^{12}\text{C}(\text{pol. d,d})$ E=1.6-3.0 MeV, measured $iT_{11}(E,\theta)$.
- 1971Du09: $^{12}\text{C}(\text{d},\text{d}), (\text{d},\text{d}')$ $E_\alpha=80$ MeV, measured $\sigma(\theta)$. Deduced optical potentials. ^{12}C deduced deformation parameters.
- 1971Gr20: $^{12}\text{C}(\text{pol. d,d})$ E=12 MeV, measured vector analyzing power $iT_{11}(E,\theta)$.
- 1971Me18: $^{12}\text{C}(\text{d},\text{d})$ E=1.6-2.7 MeV, measured $P(E,\theta)$, $\sigma(\theta)$.
- 1971Pu01: $^{12}\text{C}(\text{d},\text{d})$ E=0.4-0.85 MeV, measured $\sigma(E,\theta)$. Deduced optical-model parameters.
- 1971Wi02: $^{12}\text{C}(\text{d},\text{d})$ E=9,10,11,12 MeV, measured vector-analyzing power $A(\theta)$. Deduced optical-model parameters.
- 1971Wo10: $^{12}\text{C}(\text{d},\text{d})$ E=10 MeV, measured recoil ion charge distribution.
- 1972Ma47: $^{12}\text{C}(\text{d},\text{d})$ E=13.6 MeV, measured $\sigma(\theta)$. Deduced optical model parameters.
- 1972Pe15, 1972Pe09: $^{12}\text{C}(\text{pol. d,d})$ E=20.5,25.2,29.5 MeV, measured vector polarization $iT_{11}(\theta)$, $\sigma(\theta)$. Deduced optical model parameters.
- 1974Ar16: $^{12}\text{C}(\text{pol. d,d})$ E=20,25,30 MeV, measured P_d .
- 1974Bu06: $^{12}\text{C}(\text{pol. d,d})$ E=15.0 MeV, measured $\sigma(\theta)$, $iT_{11}(\theta)$. Deduced optical-model parameters.
- 1974Da06: $^{12}\text{C}(\text{d},\text{d})$ E=2.61-2.82 MeV, measured $\sigma(E,\theta_d)$.
- 1974Ja25: $^{12}\text{C}(\text{d},\text{d})$ E=10-20 MeV, measured $\sigma(\theta)$.
- 1974Jo14: $^{12}\text{C}(\text{d},\text{d})$, measured Q values.
- 1974Za10: $^{12}\text{C}(\text{d},\text{d})$, measured $\sigma(E)$.
- 1975As06: $^{12}\text{C}(\text{d},\text{d}), (\text{d},\text{d}')$ E=60.6,77.3,90.0 MeV, measured $\sigma(E_d,\theta)$. Deduced optical potentials. ^{12}C levels deduced quadrupole deformation, coupling parameters.
- 1975Bo58: $^{12}\text{C}(\text{d},\text{d})$ E=1.6-3.0 MeV, analyzed $\sigma(E,\theta)$.
- 1977Pe07: $^{12}\text{C}(\text{pol. d,d})$ E=30 MeV, measured $\sigma(\theta)$, vector polarization, tensor polarization. Deduced optical model parameters.
- 1977Ta08: $^{12}\text{C}(\text{d},\text{d}), (\text{d},\text{d}')$ E=9.0 MeV, measured $\sigma(\theta)$. DWBA analysis.
- 1979Wa24: $^{12}\text{C}(\text{d},\text{d}), (\text{d},\text{d}')$ E=9 MeV, measured $\sigma(\theta)$.
- 1980Du12: $^{12}\text{C}(\text{d},\text{d})$ E=650 MeV, measured $\sigma(E,\theta)$.
- 1980Ma10: $^{12}\text{C}(\text{pol. d,d})$ E=52 MeV, measured $iT_{11}(\theta)$. Deduced optical model parameters.
- 1982Ta19: $^{12}\text{C}(\text{pol. d,d})$ E=9,15 MeV, analyzed $\sigma(\theta)$, vector analyzing power data.
- 1983Ji04: $^{12}\text{C}(\text{d},\text{d})$ E=1.5-2.1 MeV, measured $\sigma(\theta)$. Deduced intermediate structure target dependence.
- 1986Ho26: $^{12}\text{C}(\text{d},\text{d})$ E=600-1100 keV, measured $\sigma(E)$ vs θ .
- 1986Ma32: $^{12}\text{C}(\text{pol. d,d})$ E=56 MeV, measured $\sigma(\theta)$, vector, tensor analyzing power vs θ . Deduced optical-model parameters.
- 1989Ok02: $^{12}\text{C}(\text{pol. d,d})$ E=56 MeV, measured $\sigma(\theta)$. Deduced singlet deuteron final state role.
- 1990Sa45: $^{12}\text{C}(\text{pol. d,d})$ E=56 MeV, analyzed $\sigma(\theta)$, vector, tensor analyzing power data. Deduced transition nature, reaction mechanism.
- 1991Be42: $^{12}\text{C}(\text{d},\text{d})$ E=52 MeV, analyzed $\sigma(\theta)$.
- 1993Be43: $^{12}\text{C}(\text{d},\text{d})$ E=110-120 MeV, measured $\sigma(\theta)$. Deduced optical model parameters.
- 1995To15: $^{12}\text{C}(\text{pol. d,d})$ E=1.8 GeV, measured $iT_{11}(\theta)$, $T_{20}(\theta)$, $T_{22}(\theta)$. Deduced efficiency, figures of merit, average analyzing

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powers vs θ .

1999Sa21: ^{12}C (pol. d,d) E=270 MeV, measured deuteron spin-flip probabilities vs excitation energy.

2001Ba18: $^{12}\text{C}(\text{d},\text{d}),(\text{d},\text{d}')$ E=170 MeV, measured $\sigma(E,\theta)$. Deduced optical model parameters.

2002Sa51: ^{12}C (pol. d,d),(pol. d,d') E=270 MeV, measured deuteron spectra, $\sigma(\theta)$, vector and tensor analyzing powers.

2007Ga07: $^{12}\text{C}(\text{d},\text{d}),(\text{d},\text{d}')$ E=15.3 MeV, measured $\sigma(\theta)$, $\sigma(E,\theta)$. Deduced reaction mechanism features.

2009Da22: $^{12}\text{C}(\text{d},\text{d}),(\text{d},\text{d}')$ E=52-200 MeV, analyzed elastic and inelastic scattering cross section and $\sigma(\theta)$ data. Deduced nuclear rms radii for excited states in ^{12}C .

See discussion on deformation parameters in (1975As06,1971Du09,2007Ga07).

^{12}C Levels

E(level) [#]	J ^π	Γ	Comments
0			
4440.5 [†]	11		
7.65×10 ³			$\beta_2=-0.48$ 2 (1975As06).
9.6×10 ³			
10.3×10 ³			
10.8×10 ³ [‡]	2		
11.8×10 ³ [‡]	2		
12.7×10 ³			
15.1×10 ³			
15.4×10 ³ ?			E(level): See (1994Mo21,1995Jo06,1999Sa21,2001Sa68,2002Sa51).
18.3×10 ³ 3	2 ⁻		This state is different than the 18.4 MeV state populated in α elastic scattering (1995Jo06). See also L=3 from references in (1980Aj01).
20.6×10 ³ [‡] 3	(1 ⁺)		J ^π : From (1994Mo21).
21.9×10 ³ [‡] 3			Γ: Broad.
26×10 ³ 1	2 [#] MeV 1		
≈27.×10 ³ [‡]			Γ: Broad.
29×10 ³ 1	4 [#] MeV 1		
≈35×10 ³	≈5 MeV		E(level): See (1994Mo21,1995Jo06).

[†] From (1974Jo14).

[‡] From (1975As06).

[#] From references in (1980Aj01).